AMENDMENTS TO THE CLAIMS

1-55. (Cancelled)

56. (New) A passive system for locating a transmitter, said transmitter producing a transmitter signal of a known frequency and known modulation scheme, said system comprising:

at least one antenna array having a first antenna element, a second antenna element, and a third antenna element, said first antenna element being operable for receiving a first received signal from said transmitter, said second antenna element being operable for receiving a second received signal from said transmitter, said third antenna being operable for receiving a third signal from said transmitter; and

electronic circuitry for said antenna array to determine a first phase difference and a second phase difference between said first received signal, said second received signal, and said third received signal, said electronic circuitry being operable for utilizing said first phase difference and said second phase difference for determining location information related to a vector oriented in a direction of said transmitter with respect to said at least one antenna array.

57. (New) The passive system of Claim 56, further comprising:

said second antenna element being spaced apart from said first antenna element by one-half wavelength or integer multiple thereof and said third antenna element being spaced apart from said first antenna element by one-half wavelength or integer multiple thereof.

58. (New) The passive system of Claim 56, further comprising a geometrical configuration of

said first antenna element, said second antenna element, and said third antenna element such that a first leg between said first antenna element and said second antenna element and a second leg between said first antenna element and said third antenna element have a first angle therebetween less than one hundred eighty degrees.

59. (New) The passive system of Claim 58, wherein said first angle is ninety degrees.

60. (New) The passive system of Claim 56, wherein said first phase difference is identified by a symbol Φ_1 and said second phase difference is identified by a symbol Φ_2, wherein said vector is defined as $(\sin\theta\cos\phi, \sin\theta\sin\phi, \cos\theta)$, and wherein said electronic circuitry uses the equations $\phi = \arctan\left(\frac{\Phi_2}{\Phi_1}\right)$ and $\theta = \arcsin\left(\frac{\sqrt{\Phi_1^2 + \Phi_2^2}}{\pi}\right)$ for determining location information.

61. (New) The passive system of Claim 56, wherein said at least one antenna array comprises one antenna array and wherein said one antenna array provides coverage over a 180 degree field-of-view.

62. (New) The passive system of Claim 61, wherein said one antenna array provides coverage over a 140 degree field-of-view.

63. (New) The passive system of Claim 56, wherein said electronic circuitry further comprises:

a local oscillator, said local oscillator being frequency locked with respect to said transmitter frequency but not being phase locked with respect to said transmitter frequency.

64. (New) The passive system of Claim 56, wherein said electronic circuitry is operable for determining said first phase difference between said first received signal and said second received signal, and said electronic circuitry is operable for determining said second phase difference between said first received signal and said third received signal.

65. (New) The passive system of Claim 56, wherein said electronic circuitry further comprises:

a spread spectrum receiver with a first receiver channel for processing said first received signal from said first antenna element, a second receiver channel for processing said second received signal from said second antenna element, and a third receiver channel for processing said third received signal from said third antenna element.

66. (New) The passive system of Claim 65, wherein said electronic circuitry comprises:

a first finger for said first receiver channel, a second finger for said second receiver channel, and a third finger for said third receiver channel, each of said first finger, said second finger, and said third finger being operable for performing a Fast Walsh Transform to determine a winning Walsh symbol based on magnitude and not phase of a Walsh vector.

67. (New) A method for passively detecting the location of a transmitter, said transmitter being operable for transmitting a transmitter signal, said method comprising:

receiving said transmitter signal with a first antenna array comprising a first antenna element that produces a first received signal, a second antenna element that produces a second received signal, and a third antenna element that produces a third received antenna signal, and wherein said transmitter signal has a known frequency and a known modulation scheme;

determining a first phase difference and a second phase difference between said first received signal, said second received signal, and said third received signal; and

utilizing said first phase difference and said second phase difference to determine location information related to a first vector in a direction of said transmitter with respect to said first antenna array.

68. (New) The method of Claim 67, wherein said first phase difference is identified by a symbol Φ_1 and said second phase difference is identified by a symbol Φ_2, wherein said first vector is defined as $(\sin\theta\cos\phi,\sin\theta\sin\phi,\cos\theta_1)$, and wherein said location information is determined by using the equations $\phi = \arctan\left(\frac{\Phi_2}{\Phi_1}\right)$ and $\theta = \arcsin\left(\frac{\sqrt{\Phi_1^2+\Phi_2^2}}{\pi}\right)$.

69. (New) The method of Claim 67, further comprising:

receiving said transmitter signal with a second antenna array spaced from said first antenna array by a known distance, said second antenna array comprising a fourth antenna

element that produces a fourth received signal, a fifth antenna element that produces a fifth received signal, and a sixth antenna element that produces a sixth received antenna signal;

determining a third phase difference and a fourth phase difference between said fourth received signal, said fifth received signal, and said sixth received signal; and

utilizing said third phase difference and said fourth phase difference to determine additional location information related to a second vector oriented in a second direction of said transmitter with respect to said second antenna array.

70. (New) The method of Claim 69, wherein the following:

said first phase difference is identified by a symbol Φ_1 and said second phase difference is identified by a symbol Φ_2, wherein said first vector is defined as $(\sin\theta_1\cos\phi_1, \sin\theta_1\sin\phi_1, \cos\theta_1)$, wherein said location information is determined by using the equations $\phi_1 = \arctan\left(\frac{\Phi_2}{\Phi_1}\right)$ and

$\theta_1 = \arcsin\left(\frac{\sqrt{\Phi_1^2 + \Phi_2^2}}{\pi}\right)$; and

said third phase difference is identified by a symbol Φ_3 and said fourth phase difference is identified by a symbol Φ_4, wherein said second vector is defined as $(\sin\theta_2\cos\phi_2, \sin\theta_2\sin\phi_2, \cos\theta_2)$, wherein said additional location information is determined by using the equations $\phi_2 = \arctan\left(\frac{\Phi_4}{\Phi_3}\right)$ and $\theta_2 = \arcsin\left(\frac{\sqrt{\Phi_3^2 + \Phi_4^2}}{\pi}\right)$.

71. (New) The method of Claim 69, further comprising utilizing an orientation of said first vector and an orientation of said second vector for locating said transmitter.

72. (New) The method of Claim 69, further comprising providing a local oscillator which is frequency locked with respect to said transmitter frequency but not phase locked with respect to said transmitter frequency.

73. (New) The method of Claim 72, further comprising processing said first received signal, and said second received signal, and said third received signal in a spread spectrum receiver.

74. (New) The method of Claim 73, further comprising downconverting and despreading said first received signal, said second received signal and said third received signal in said spread spectrum receiver.

75. (New) The method of Claim 74, further comprising tracking multiple transmitter paths of said first received signal, said second received signal, and said third received signal.

76. (New) The method of Claim 75, further comprising separately time multiplexing said multiple transmitter paths for each of said first received signal, said second received signal, and said third received signal.

77. (New) The method of Claim 76, further comprising indexing multipath components for said first received signal, said second received signal, and said third received signal with respect to timing of a locally generated PN sequence.

78. (New) The method of Claim 77, further comprising comparing an indexed multipath signal of said first received signal to a corresponding indexed multipath signal of said second received signal and a corresponding indexed multipath signal of said third received signal to produce a multipath comparison.

79. (New) The method of Claim 78, further comprising.utilizing said multipath comparison to determine said first phase difference and said second phase difference.

80. (New) The method of Claim 79, further comprising storing a plurality of modulation symbols, and performing a Fast Walsh Transform on said plurality of modulation symbols to determine a winning symbol.

81. (New) The method of Claim 80, further comprising.comparing said winning signal to said plurality of symbols to determine a signal to noise ratio.

82. (New) The method of Claim 81, further comprising utilizing said signal to noise ratio to determine whether a local PN-generator is aligned with respect to said transmitted signal.

83. (New) A method for a passive system operable for determining location characteristics of a plurality of moveable transmitters, each of said plurality of moveable transmitters producing a transmitter signal, each of said plurality of moveable transmitters having a known transmitter frequency and known transmitter modulation scheme, said system comprising:

providing a plurality of receivers spaced apart wherein each of said plurality of moveable transmitters is receivable by at least one of said plurality of receivers;

providing each receiver with an antenna array having three separate antenna elements;

determining two transmitter signal phase shifts at said three separate antenna elements with respect to a first moveable transmitter and a first receiver;

utilizing said two transmitter signal phase shifts to determine information related to a vector oriented in a first direction of said first moveable transmitter with respect to said first receiver.

84. (New) The method of Claim 83, wherein said two transmitter signal phase shifts are identified by symbols Φ_1 for a first signal phase shift and Φ_2 for a second signal phase shift, wherein said vector is defined as $(\sin\theta\cos\phi, \sin\theta\sin\phi, \cos\theta)$, and wherein said information is determined by using the equations $\phi = \arctan\left(\frac{\Phi_2}{\Phi_1}\right)$ and $\theta = \arcsin\left(\frac{\sqrt{\Phi_1^2 + \Phi_2^2}}{\pi}\right)$.

85. (New) The method of Claim 83, further comprising utilizing a receiver generated PN signal to determine a distance from said first receiver to said first moveable transmitter, and utilizing said distance with said information related to said first direction to determine a position of said first moveable transmitter.

86. (New) The method of Claim 83, further comprising determining a second of two transmitter signal phase shifts at a second of said three separate antenna elements with respect to said first moveable transmitter and a second receiver, utilizing said second of two transmitter signal phase shifts to determine information related to a second direction of said first moveable transmitter with respect to said second receiver, and utilizing said information related to first direction and said second direction to determine a position of said first moveable transmitter.

87. (New) The method of Claim 83, further comprising obtaining a possible path of travel of said first moveable transmitter, and utilizing said first direction and said possible path of travel for determining a position of said first moveable transmitter.

88. (New) The method of Claim 83, further comprising displaying a position of one or more of said plurality of moveable transmitters on a map.

89. (New) The method of Claim 88, further comprising displaying said map in a vehicle to which said moveable transmitter is affixed.

90. (New) The method of Claim 83, wherein each of said plurality of receivers comprises a noncoherent receiver.

91. (New) A method for modifying an existing communication system comprising a plurality of moveable transceivers and a plurality of affixed transceivers to provide location information related to said plurality of moveable transceivers, said existing communication system being operable for transmitting a data modulated signal via an electromagnetic wave from said plurality of moveable transceivers to said plurality of affixed transceivers, said electromagnetic wave having a known wavelength, a known transmitter frequency, and a known transmitter modulation scheme, said method comprising:

mounting an antenna array at each of said affixed transceivers, each antenna array having three antenna elements spaced apart by an integer times one-half of said wavelength, said three antenna elements being operable for producing a first received data modulated signal, a second received data modulated signal, and a third received data modulated signal in response to said data modulated signal from a first moveable transceiver of said plurality of moveable transceivers;

providing a receiver with each antenna array for receiving said data modulated signal from said first of said plurality of moveable transceivers, said receiver being operable for measuring a first phase difference and a second phase difference between said first received data

modulated signal, said second received data modulated signal, and said third received data modulated signal;

determining information related to a vector oriented in a first direction of said first moveable transceiver from said first phase difference and said second phase difference; and

utilizing said information related to said first direction for determining a first location of said first moveable transceiver.

92. (New) The method of Claim 91, wherein said first phase difference is identified by a symbol Φ_1 and said second phase difference is identified by a symbol Φ_2, wherein said vector is defined as $(\sin\theta\cos\phi, \sin\theta\sin\phi, \cos\theta)$, and wherein said information is determined by using the equations $\phi = \arctan\left(\frac{\Phi_2}{\Phi_1}\right)$ and $\theta = \arcsin\left(\frac{\sqrt{\Phi_1^2 + \Phi_2^2}}{\pi}\right)$.

93. (New) The method of Claim 91, further comprising utilizing a second receiver for producing information related to a second direction of said first moveable transmitter with respect to said second receiver, and determining said first location of said first moveable transceiver by utilizing said information related to first direction and said second direction.

94. (New) The method of Claim 91, further comprising determining a distance from said receiver to said first moveable transceiver, and determining said first location of said first moveable transceiver by utilizing said first direction and said distance.

95. (New) The method of Claim 91, wherein said first received data modulated signal, said second received data modulated signal, and said third received data modulated signal each comprise multipath signals, providing circuitry in said receiver for tracking said multipath signals such that said first phase difference and said second phase difference are determined from respective multipath signals received by said three antenna elements.

96. (New) The method of Claim 91, wherein said step of providing a receiver further comprises providing a noncoherent receiver such that a local oscillator of said receiver has a local oscillator frequency which is frequency locked with respect to said transmitter frequency but which is not phase locked with respect to said transmitter frequency.